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(54) Title: **METHOD AND SYSTEM FOR USING A COMMUNICATION NETWORK TO SUPPLY TARGETED ADVERTISING IN INTERACTIVE MEDIA**

(57) Abstract: A system and method using a communication network to play streaming information to at least one user. One or more servers are employed to store a user profile for each of the users in a database, play a selected content data stream on a user device, identify an advertising break in the selected content data stream, retrieve at least one advertisement from an advertisement database, and play the retrieved advertisements on the user device during the identified advertising break. The retrieved advertisement is selected in accordance with a matching of the corresponding user's profile with the advertisement's criteria. The system invokes at least one media player on the user terminal. The media player plays the selected content stream and, upon receiving notification of an advertising break, switches to play one or more targeted streaming advertisements. The media player resumes play of the selected content at the completion of the advertising break.

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## **METHOD AND SYSTEM FOR USING A COMMUNICATION NETWORK TO SUPPLY TARGETED ADVERTISING IN INTERACTIVE MEDIA**

### **BACKGROUND OF THE INVENTION**

5           The present invention relates to a method and system for using an interactive communication system to play to users, streaming, i.e., sequential content interleaved with targeted advertisements selected according to predetermined criteria, and in particular, to a method and system in which the switching between the streaming content and the targeted advertisements is accomplished by the user's multimedia player based on messages embedded  
10       within the content stream.

          Public and network television, cable systems and radio stations have for decades distributed proprietary copyrighted subject matter to the viewing and listening public without any charge or at subsidized rates due to the sponsorship and financing of these programs by various advertisers and/or governmental bodies. With television and radio  
15       broadcast as well as cable delivery, it is difficult if not impossible to deliver specific advertisement messages to finely selected audiences since audience targeting is possible only on the basis of broad geographical areas, e.g. the City of New York. It is presently impossible through broadcast radio or television to target individuals, or individuals who share a common trait, e.g. a certain age range, educational background, etc. Likewise, it is impossible to  
20       deliver such targeted advertising messages while at the same time permitting the advertising recipient the immediate ability to respond.

          In contrast, digital cable systems, bi-directional satellite systems as well as the Internet communicate (at least along a portion of their paths) over personal communication lines, i.e. by telephone, by cable, by satellite or by using wireless communication technology.  
25       This enables sending of tailored messages between the ultimate recipient of specific information and the source of the information, e.g. a cable head end, satellite, a website, Internet Service Provider, etc. Traditionally, proprietary, e.g. copyrighted, information could be delivered to the user. In most cases, charge accounts are established with an Internet Service Provider, cable operator, satellite or other wireless communication provider, etc. and  
30       the recipient of the proprietary data content pays for those services and/or information. It is

desirable to provide a bi-directional communication method and system for the dissemination of valuable proprietary information substantially free of charge, just as it is provided through network television and broadcast radio stations without any costs or with reduced cost to the ultimate user/subscriber and with advertiser sponsorship thereof targeted to the user.

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### SUMMARY OF THE INVENTION

Accordingly, it is a general object of the present invention to provide programmed or on demand television, multimedia or other copyrighted data via a bi-directional communication facility such as a cable system to numerous users while reducing or eliminating charges thereto.

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It is a further object of the invention to provide data content to the general public in a manner which facilitates the delivery of such data content in sequence with advertisement material tailored to the individual or his or her receiving device, to thereby underwrite the cost of supplying to members of the public valuable television, multimedia and other data containing information content.

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It is a further object of the invention to provide advertisers a method of targeting consumers meeting a profile designated by the advertiser which assures that the targeted consumer or the consumer's device receives a message tailored for such consumer.

It is a further object of the invention to provide a system of the above type which is easy to use and implement.

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The present invention provides advertising and multimedia content or audio sequentially in a seamless manner so that the user perceives no break between the advertising and multimedia content or audio.

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The foregoing and other objects of the invention are realized in accordance with a preferred embodiment of the present invention which includes a software-controlled and microprocessor-based repository in which the dossiers of users are stored and updated. Users use their own microprocessor-based systems to receive the programmed data and advertisements from the repository over cable, satellite, wireless or Internet enabled devices.

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The method and system handle advertisers by creating advertiser dossiers containing the amount of advertising purchased by each advertiser, the amount used up and the amount remaining to be used ("available allocation"). The advertiser dossiers also contain

specifications of the desired consumer profiles to be targeted, specifications of the category of products or services to be advertised, specifications of any territorial or local time requirements or preferences, and a key to the location of the audio or multimedia advertising content.

5           The present invention includes a repository, i.e. one or more databases, in which streaming content is stored and updated in either or both digital or analog form or a micro-processor based system which provides encoding and distribution of near real-time broadcasts, e.g. radio and/or television stations, cable broadcast, cable on demand or Internet only broadcasts and the like. Each item of streaming content is preferably cataloged, defining  
10           the nature or category of the contents, the identity of the copyright holder or holders, the characteristics of the anticipated consumer or most likely user, the category of any product or service the advertising for which is not to be inserted into the content, and any limitation on the availability of the content. The content is converted to digital form for delivery over the interactive communication system. The content may further be encoded to provide selected  
15           functional data for control purposes, to prevent unauthorized duplication and to identify the user to whom the content is to be delivered.

          The database also includes the identity of each copyright holder of the content and a message identifying the artist and/or the copyright holders of each item of content ("identity message").

20           A separate database is used to store and update the advertising content, again in either digital or analog form, later to be matched and transmitted to the ultimate consumer/subscriber so that it is perceived by the consumer as sequential and without interruption between advertisements and content. The advertisements are converted to digital form for delivery as audio and/or audio/video messages over the interactive communication  
25           system. The advertising content of the database may include generic messages.

          The present invention provides a method of using a communication network to deliver information to at least one user in which a user profile is stored for each of the at least one users in a database. A request is received for a selected content data stream from the at least one user. The selected content data stream may be encoded to indicate various  
30           information pertaining to the data stream such as the nature and timing of the content, e.g. the timing and sequence of a song, a TV program or other audio/video content and/or of at least one advertisement. The selected content data stream is played on a terminal or device

corresponding to the user. Special codes placed in the selected content data to facilitate timing of advertising are detected by the user's device. An advertising break is identified in the selected content data stream. At least one advertisement from an advertisement database is selected in which each advertisement has at least one criterion associated therewith, the  
5 retrieved at least one advertisement being selected in accordance with a matching of the corresponding user's profile with the at least one advertisement criterion. The at least one retrieved advertisement is played on the user's device during the identified point within the content.

The present invention also provides a system which uses a communication  
10 network in communication with at least one user device to play streaming information to at least one user of the at least one device, in which the system includes at least one server in communication with the communication network, the at least one server executes functions which are distributed among the at least one server. The functions include:

receiving a request from the user device to invoke a selected content  
15 stream;

storing at least one advertisement and providing an advertisement  
stream to the at least one user device. The advertisement stream includes at least one advertisement selected based upon a matching of a profile corresponding to the user with at least one criterion corresponding to the stored advertisement. The advertisement stream is  
20 played by the at least one user device during advertisement breaks in the selected content stream.

As another aspect, the present invention provides a method of using a communication network to play multimedia or streaming audio content to at least one user in which a user profile for each of the at least one users is stored in a database. A request for a  
25 selected multimedia streaming or audio content stream is received from the at least one user. The multimedia or streaming audio content stream includes a message providing information relating to an upcoming advertisement break such as an identifier, and a duration indicator, the nature of the advertisement, etc. The selected content stream is played on a device corresponding to the user. The retrieved at least one advertisement is selected in accordance  
30 with a matching of the corresponding user's profile with the at least one advertisement criterion. A message indicating the beginning of the advertisement break is identified. The at

least one buffered advertisement is played on the device during the identified advertising break.

As another aspect, the present invention enables a user to directly respond to the selected and targeted advertising message in substantially immediate interaction by using a media player (i.e. a software or hardware based presentation system) on the user terminal or device communicating thereto. The advertiser and user are thereby enabled to further exchange additional information in near real-time.

As still yet another aspect, the present invention provides a device connected to a communication network for playing streaming information to at least one user, in which the device has at least one media player. The at least one media player plays a content stream selected by the at least one user and plays an advertising data stream to the user in which the advertising stream is separate from the content stream. The content stream includes an advertising period. The advertising data stream is played to the user during the advertising period in the content stream.

Other features and advantages of the present invention will become apparent from the following description of the invention which refers to the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

For the purpose of illustrating the invention, there is shown in the drawings a form which is presently preferred, it being understood, however, that the invention is not limited to the precise arrangement and instrumentalities shown.

FIG. 1 is a block diagram of the basic system hardware arrangement of the present invention.

FIG. 2 is a block diagram of major software blocks of the present invention.

FIG. 3 shows a block diagram of the software control and protocol flow suitable for implementing a portion of the preferred embodiment of the present invention.

FIG. 4 is a block diagram of an example of a hardware and software arrangement of elements constructed in accordance with the principles of the present invention in the case where a PC separately receives the selected content data stream and advertisement data stream.

FIG. 5 is a flow chart of the operation of a second aspect of the present invention.

## DETAILED DESCRIPTION OF THE INVENTION

Initially, it is noted that the below description of the present invention is applicable to both audio content, for example music and/or speech, etc., and multimedia (audio/video) content. As such, those portions of the description which are directed toward music or audio content should be understood to include and be operable with multimedia content as well. It is also noted that the terms "subscriber" and "user" represent any type of possible user, regardless of the registration process or requirements, if any, of a server associated with the system or the provider of the server or system.

For convenience, the term "Internet" as used herein is intended to mean any method of near immediate at least two way communication without regard to whether the communication is the result of use of telephone lines, cables, satellite, cellular, spread spectrum or other wireless means.

In general terms, the present invention comprises a software controlled CPU, e.g. a microprocessor based repository in which the dossiers of a plurality of users are stored and updated. The information contained in the dossiers includes the type of music that the subscribers enjoy, the data or multimedia content selections previously or simultaneously made, the age, marital status, income level, geographic location and other characteristics of the user.

Preferably, the users receive the programmed music and advertisements from at least one repository over the Internet. However, the invention is applicable to communications between system and users that use non-Internet channels or combinations of channels, e.g. cable, direct broadcast, direct narrowcast or any means of communication provided the method of communication permits delivery of an identified audio and/or audio/video message to an identified class of user and enables the user to communicate or respond to the advertiser or system in substantially real time. The specific data or multimedia content and advertisements transmitted may vary as a function of the information contained in the dossiers of the users and the dossiers of the advertisements. In addition, the dossiers may change from time to time with a resulting change in data or multimedia content and advertisement programming. Further, the programmed data or multimedia content and advertisements may change as a function of the time of year or other conditions.

Referring to FIG. 1, the physical hardware/software configuration of the present invention preferably comprises a central processing unit (CPU) 10 which interfaces via

the Internet 20 with a plurality of users operating PCs 12, 14 ... 16 (or other device capable of receiving individualized content for audio and/or multimedia production) which respectively have speakers 12a, 14a ... 16a to play programmed music or other audio information which is transmitted to them via the Internet 20 and/or a video display. As already explained, in accordance with the present invention, the music being transmitted over the Internet to the users is sequentially related to or linked to targeted advertising material paid for by advertisers in the form of audio or multimedia messages tailored to the user or musical profile 18, 19 ... 21.

The CPU 10 may be any type of computer system, for example a mainframe, a server-based system of PCs, a stand-alone microprocessor and the like. The CPU 10 has the usual operator interface, e.g. a keyboard 22 and complement of memory and IO devices (not shown). Of significance here is that the CPU 10 either directly or through communication with other CPUs maintains a plurality of databases including at least one database containing the advertising content, the location where the advertising content is stored, an advertisers/marketing criteria database 24 in which it stores the advertising preferences of the advertisers 18, 19 ... 21, e.g. the type of users that these advertisers would like to reach, such as their geographic locations, and the system usage privileges and/or credit balance of these advertisers.

The database 26 stores the advertisement content, i.e. the actual advertising copy of the various advertisers 18, 19 ... 21. Note that any one of the advertisers 18, 19 ... 21 can have several different audio or multimedia messages stored for transmission to different classes of users 12, 14 ... 16 as well as to the same users.

The users profile database 28 contains the actual profiles of the individual users 12, 14, 16, specifying for each user criteria as, for example, age, demographic data, education, sex, marital status, income, ethnic background, data content selections previously or simultaneously made by the user, purchasing habits, personal habits, and the like. Finally, the content is stored in the database 30. This database includes the musical work, the profile of the work, the identity of the artist and copyright holders or the place from which any such data may be retrieved. Together, these databases enable the present invention to attain its objective of matching requested data content with advertisement copy to be transmitted to the individual users.



The operation/control block 32 contains the executable portion of the program code which runs the CPU 10 and which controls the overall operation of the system of the present invention.

FIG. 2 illustrates a representative (non-limiting) flowchart of the overall software functions performed by the CPU 10 of FIG. 1. Proceeding from the starting/initialization software block 50, the program proceeds to decisional block 52 where it queries what major function is to be performed. If the major function is a response to a request from a customer for music, the program proceeds to the set of routines 54 which involve the servicing of a customer request and which are more fully described further on by reference to FIG. 3.

Otherwise, the program proceeds to software block 56 to handle general housekeeping, database management and customer and business relations. At decisional block 58, the program further determines whether the requested task is to manage the databases or other functions. If database management, the program proceeds to block 60 to execute a series of program functions involving the creation or updating of the advertiser database (element 24 of FIG. 1) which contains the names of the advertisers, individuals at advertisers to be contacted, billing information, prepaid advertising time available for each advertiser and a range of other business information and criteria. Most importantly for the present invention, this database also specifies for each particular advertisement the type, i.e. the profile of the users/listeners which the particular advertiser would like to target. It is not necessary to limit the specification to a narrow class of individuals. Several classes can be identified and prioritized. Moreover, each advertiser may have different renditions of audio advertising copy to be directed to different audiences, i.e. classes of listeners or to the same classes of listeners.

From block 60 the program proceeds to block 62 where it performs similar functions for the users/listener database 28. For each user that is being added to the database or whose profile is being updated, the database includes personal data including (as already mentioned) age, education, income, data selections previously or simultaneously made by the user, purchasing habits, etc. This database can also include a field in which the user specifies the type or types of music that the individual prefers, to facilitate the system's ability to present to each individual a menu of music selection which best fits the individual's preferences and music taste.

Software block 64 attends to and handles the maintenance of the actual music content and/or location. Each source or file of music is classified, categorized and its location, e.g. Uniform Resource Locator, included in the database for future reference and ultimate content transmission to the users 12, 14 ... 16.

5 Similarly, at block 66 the program handles the maintenance and updating of the library of advertising copy, each piece of which has been submitted by or prepared for one or another of the advertisers. A single advertiser may have stored one or several different advertisements.

10 While the inventors contemplate that this advertising copy will be in the form of audio/musical messages, the invention is not so limited. Indeed, the invention contemplates that the advertising copy may be video information that can be played on the users media player device and includes voice information that will play through the speakers of the user's equipment and/or video information for display on the user's device. In sum, the program blocks 60, 62, 64 and 66 are responsible for the handling of all aspects of the creation,  
15 updating and modification of the large databases with which the CPU 10 of the present invention constantly communicates.

Alternatively, from decisional block 58, the program proceeds to decisional block 70 to determine whether it is necessary to take care of billing matters. If so, the program proceeds to block 72 where the program tallies accounts, listing the content provider and any  
20 required royalty payments, and the billings from ads inserted within content. Together, this information is useful, for example, for calculating (if necessary) fees payable to the providers of the music and to provide "play" statistics for the industry on a current and accurate basis. The block 72 further tackles the task of preparing billing data for advertisers and revenue sharing data for e.g. content providers, sources of users, advertising, sellers, etc. For example,  
25 the system may allow certain advertisers to operate without prepaid credit balances. In this case, as the advertisements of the particular advertiser are being sent to users, an accounting is made of the total advertising messages delivered and that advertiser may be billed accordingly on a monthly, bi-monthly or other basis. The proceeds of such billing may then be allocated among the content providers, system operator, advertising seller, source of listeners, etc. The  
30 program also proceeds to block 60 to decrement advertising availability.

Another software task of the CPU based system 10 is executed at software block 74 which is dedicated to the tasks of interfacing, via the Internet or other interactive

medium, with existing or potential content providers and advertisers for purposes of signing up such content providers and advertisers, providing information regarding billing data and available content, answering general inquiries through the running of an automatic voice mail system, a web page or the like.

5 From decisional block 70, the program also has the option of proceeding via decisional block 80 to block 82 which is responsible for the distribution of one or several programs or digital contracts which may be used for controlling and/or identifying the local devices or particular users of such devices 12, 14 ... 16 and/or to interface with the CPU 10 (which may be made available through a web page on the Internet). Such programs or digital  
10 contracts downloaded from the web page, which operate in conjunction with the system of the present invention, provide various functions including allowing users to automatically call up the CPU 10, automatically make content selections, identify the user and the like.

Other functions provided by the software of the present invention are shown by proceeding from the decisional block 80 to block 84 which broadly designates the general  
15 class of miscellaneous functions performed in the system of the present invention. This includes, as shown in block 86, software which contains and carries out the protocols for creating packets of digital information which are to be transmitted to users. Another function involves security which is handled by software block 88. Security includes filtering any data input to the system and the encoding and decoding of advertising copy that is transmitted  
20 over the Internet.

Software block 90 generally designates a portion of the program which interfaces with users for the purposes of allowing users to place orders for products or services that are advertised or presented in the advertising messages that are delivered to the users. In well known manner, the various software routines eventually reach end block 67, so  
25 that the program may loop and return to the start block to permit the orderly and reliable operation thereof.

The specific task of responding to a user's request for particular data or content and the delivery of that data or content to the user is illustrated in the general software block diagram of FIG. 3. At block 100, the program initiates a search for the specific music content  
30 or other data content the user has requested. The program proceeds to software block 102 where the request for the particular music/information is recorded in the accounting database and an independently running subroutine at block 104 proceeds to create a "response packet"

for the individual user. Such a response packet typically consists of one or more pieces of music, (or uniform resource locators to such music, music streams or other data) which has been encoded/encrypted for transmission over the Internet, to which an advertiser's message has been appended as a leader or header thereof, along with a generic or music specific voice over. Also, a message may be appended at the end of each piece of music, for example, in the form of a statement from the artist, i.e. "a wrapper". While the response packet is being prepared at block 104, the program proceeds to block 106 to determine the availability of the selection. If available, the program proceeds to block 108 pertaining to music data selection and block 110 for advertiser selection. If an audio message is authorized to be added, the program proceeds from block 110 to validate and attend to the audio message authorization. If authorized, the audio message is looked up at block 126 (from database block 66) and is added to the response packet at block 128. By implication, a uniform resource locator directed thereto can also be added. Block 130 registers the audio message delivery in the accounting database at block 130, as previously described. The program proceeds to block 124 which consists of a sequence of software instructions that are responsible for adding the response packet to the queue at block 104.

As described above, simultaneously, block 108 validates content authorization by prohibiting replay of the same music in a single request and limiting the number of requests to a programmed limit, i.e., 10 selections, or if a uniform resource locator is used, then whether the uniform resource locator includes or represents content approved for delivery. If the request is validated, the program proceeds to collect the musical work(s) selected (or redirects user's player thereto) and its related generic or individualized identity audio message at block 112 and 114, or the applicable uniform resource locator therefore. The program then delivers the partial response packet at block 124 where it is appended to the audio message packet and delivered to block 104 ready to receive further response packets, if any, and for delivery via block 10 to subscribers ... 12, 14, 16.

However, if no authorization to provide a particular type of response packet is noted, the program creates at software block 118 an "access denied" message which is then transmitted without any music or other data content or uniform resource locator (other than a request to select another offering) to the user at block 124. Simultaneously, a record of the inability to deliver the particular subscriber selection is registered in software block 122.

Thus, the present invention achieves its objectives by providing a software controlled microprocessor based repository in which the dossiers of all advertisers are stored and updated. The information contained in the dossiers contains the amount of advertising purchased, the amount used and the amount remaining to be used ("available allocation"), a specification of the desired consumer profile, a specification of the category of product or service to be advertised, a specification of any territorial or local time requirements or preferences, and a key to the location of the audio advertising content.

The present invention includes a software controlled microprocessor based repository in which all content is stored and updated in either or both digital or analog form for either audio or audio/video delivery. Each item of content is catalogued defining the nature or category of the content, the identity of the source, the profile of the expected consumer or user, the category of any product or service which is not to be annexed to the content, and any limitation on the availability of the content. Content is converted to a digital form for delivery over the Internet or other communication medium permitting individualized delivery. Content is encoded to prevent unauthorized duplication and to identify the subscriber to whom the content is to be delivered.

One aspect of the present invention includes a software controlled microprocessor-based repository in which all advertisements are stored and updated in either digital or analog form ready to be linked and transmitted. Advertisements are converted to a digital form for delivery as audio and/or audio/video messages over the Internet or other communication medium permitting individualized identification and delivery.

Another aspect of the present invention preferably includes at least one software controlled microprocessor-based repository of digital audio content which contains generic audio messages and/or identity audio messages.

The subscriber selects the content which he or she desires to receive, and the content is placed in a queue. Based on the profile of the content and/or the profile of the user, a determination is made by the system as to which advertising messages may be delivered. The system determines whether the permitted advertising message has available "allocation" and whether other required parameters have been met. From the remaining filter, the next available advertising message is selected based upon strategies specified by the advertiser.

The selected advertising message is then placed in a queue. The system automatically links the advertising message to the user selected content so that the advertising

message and selected content and optionally a generic or identity message is presented to the user as a single data stream along with other such streams pursuant to the user's request. The completed data streams, including all selections, are then delivered to the user over the Internet or other communication medium, permitting individualized delivery.

5           There is no requirement for a one-to-one relationship between an advertising message and a class of subscribers. For example, a particular advertisement can be classified to be played to a first class of subscribers as a first choice, to a second class of subscribers as a second choice and so on. In this manner, an advertiser desiring that its messages reach broader audiences may also earmark its advertisements to secondary classes of listeners, thus  
10           increasing the versatility and usefulness of the present invention.

          As another aspect of the present invention inherent to the above description, one of ordinary skill in the art would understand that the arrangement of the transmission of the selected content and the advertisements is not critical to the invention, as long as the advertisements appear as sequentially appended to the content when played to the user. For  
15           example, PCs 12, 14 ... 16 can be arranged with software which separately receives the content data stream and the advertisement, appends the advertisement to the content data stream either by insertion therein or by switching from one stream to the other, and sequentially plays the resultant composite stream. A specific example of an embodiment of this aspect is described with reference to FIG. 4.

20           FIG. 4 is a block diagram showing an example of the elements and their logical interconnectivity constructed in accordance with the principles of the present invention in the case where PCs 12, 14 ... 16 separately receive the selected content data stream and the advertisement data stream. For the sake of simplifying the description, the example refers only to PC 12, it being understood that the present invention can be scaled to include many  
25           PCs. Although this aspect of the invention is described with respect to a PC, it is understood that, as described above, any user device with access to the Internet or any other interactive network can be used as long as that device can play streaming content to a user.

          As shown in FIG. 4, this aspect of the present invention preferably comprises a multitude of application specific servers. It should be noted, however, that descriptions of the  
30           servers and the functions they perform need not necessarily be implemented on separate physical devices. For example, software implementing specific functions, such as an advertisement management function, etc., can be implemented within the same physical server.

These functions are described below in detail. Further, although not shown, it is contemplated that each of the functions are implemented as part of devices which have access to the Internet or other global or private interactive communication network upon which the system is implemented.

5               Two elements of this aspect, namely content server 140 and advertisement stream server 142, preferably provide the selected content and targeted advertisements, respectively, to PC 12. The advertisements provided by advertisement stream server 142 are preferably retrieved from advertising content database 26 (See FIG. 1). The content provided by content server 140 can be stored in a content database such as database 30, or can be a  
10           streaming digital representation of a near real-time broadcast such as radio programming distributed across the computer network, for example, by a webcasting service (not shown). The streaming content is preferably arranged in a standard streaming format such as the Advanced Streaming Format (ASF) capable of being played on a media player such as by MICROSOFT's Media Player.

15           According to the aspect shown in FIG. 4, content server 140 provides streaming content of near real-time broadcasts and is preferably comprised of on-air system 144 and On-air Internet Protocol (OIP) server 146. On-air system 144 in conjunction with OIP server 146 inserts special marks into outbound streaming audio content stream 148 as the broadcast content is encoded into the streaming audio format.

20           Although the system is described with respect to streaming audio, it is contemplated that streaming video or audio/video data content and audio/video advertising can be equally provided.

              Some predefined time before an advertisement break occurs in the streaming audio, for example 10 or more seconds, a special instruction such as an "open event" message  
25           is placed into the stream, along with an indication as to the duration of the upcoming advertisement break ("break"). Advertisement break refers to the period in which advertisements are present in the content stream such as those which occur during a radio or television broadcast or the point at which the content stream provider will permit advertising content to be played. Just as an advertisement break occurs, OIP server 146 inserts an "event"  
30           message into the data stream. This allows PC 12 to determine that a break is upcoming and the exact time the break occurs.

Media players A 150 and B 152 can be any audio and/or audio/video multimedia players which can execute on PC 12, for example MICROSOFT's Windows Media Player. The media player uses above referred to messages to determine when to request and play the advertisements. As such, it is PC 12 which switches between the streaming content received from content server 140 and the advertisement stream received from advertisement stream server 142 to create a sequential play of content and advertisement.

Although it is contemplated that media player A 150 can play both the selected content stream from content server 140 and the streaming advertisements from ad stream server 142 by switching between the streams as described below, it is also contemplated that PC 12 can execute multiple instances of the media player, shown as media player A 150 and media player B 152. In the latter case, the selected content stream 148 is played by one media player such as media player A 150 while streaming advertisements are played by a different instance of the media player such as media player B 152. Stream coordination and reproduction in the form of play back to the user and control communication between media player A 150 and media player B 152 are controlled by a web browser such as web browser B 166. In the alternative, play back and control communication can be accomplished directly between media player A 150 and media player B 152 without the need for facilitating software such as web browser B 166.

For the sake of simplicity, this aspect of the present invention is explained with reference to the multiple media player instance approach, it being understood however, that the present invention is also implementable with a single media player instance.

Also as shown in FIG. 4, this aspect of the present invention preferably includes profile server 156, advertisement management server 158, advertisement management user system 160, stream database 162 and ad stream server 142.

As discussed below, ad management server 158 manages the advertisements such that one or more targeted advertisements are distributed and played to the user during each advertising break in content stream 148. Operation in this manner allows the user to hear their selected content with targeted advertisements appended to the content stream during each advertising break in data stream 148. For example, if the user opts to listen to a content stream which originates from a different geographic region, the advertising breaks in data



stream 148 appear to the user to be a seamless sequential appending of content with targeted advertisements relating to the user's particular interests.

Once a user selects a data stream, for example by selecting a corresponding link from web browser A 164, ad management sever 158 creates a list of targeted advertisements which will replace a break for an individual user, and causes the player on the user's corresponding PC 12 to switch to those advertisements instead of the "live" content stream. As discussed above, the targeted ads are selected based on the content profile, the user's profile, and advertisement criteria.

CPU 10 preferably provides a number of functions relating to the execution of break support functions, including receiving an advance stream re-director (ASX) request, receiving fetch requests, receiving load data requests, determining that a time interval has been reached to retrieve further break information from OIP server 146, determining that the time interval has been reached before a scheduled break is to occur and determining that the time interval has been reached without receiving an ASX file request from PC 12. CPU 10 preferably responds to each request independently and is able to handle multiple concurrent requests for each event from different user devices.

The request for an ASX file comes from a media player, such as media player A 150 in the case of a single media implementation or media player B 152 in the case of a multiple media player implementation 165. The ASX file contains the list of advertisements to be streamed to PC 12 during a break. In particular, an ASX file is typically an extended mark-up language (XML) file arranged using a known set of instruction types which controls the sequencing of streams played by media player A 150 and media player B 152. Although this aspect of the invention preferably implements advertisement list transmission using the standard ASX format, it is contemplated that any suitable format and technology can be used to retrieve an identification file comprising the list of advertisements to be requested and played during a break. The list of advertisements includes the storage locations of the listed advertisements in advertisement content database 26.

Upon receiving an ASX file request, CPU 10 constructs the ASX file based on the user's profile information as received from profile server 156 and advertisement management server 158. The operation of profile server 156 and advertisement management server 158 are described in detail below. The ASX file includes an entry for every

advertisement to be played together with a URL comprised of the website address for a web page related to the streaming advertisement.

CPU 10 also responds to fetch requests transmitted by media player A 150. Media player A 150, or some other software application executing on PC 12 operates to  
5 allow a user to request more information for an advertisement playing or played, preferably by providing an HTML link which the user can select. Selecting this link generates a fetch request which is transmitted to CPU 10. CPU 10 then responds to PC 12 by using the website address in the fetch request to launch web browser C 154 and directing web browser C 154 to the corresponding website. In addition, CPU 10 preferably notes the user's request to  
10 advertisement management server 158 for future advertisement targeting and accounting purposes.

Upon receipt by media player A 150 of an "open event" message providing notice that a break is forthcoming, media player A 150 notifies CPU 10 that a break is anticipated. CPU 10 notifies advertisement management server 158 to select one or more ads  
15 appropriate for the corresponding user's profile. A plurality of ads or other content can be selected such that the total break time interval will be occupied with targeted advertisements and content.

CPU 10 preferably notifies ad management server 158 of the upcoming break to obtain the list of targeted ads so CPU 10 can create the ASX file which will be requested by  
20 and/or sent to media player B 152. In the case where the time interval has been reached without receiving the ASX file request from media player B 152, PC 12 (and the corresponding user) and the user identification data are deactivated such that CPU 10 and the other servers discontinue delivery of the requested data stream and ad stream to PC 12. This can occur, for example, where the user has shut down media player A 150 or a communication  
25 interruption has occurred between PC 12 and the communication network.

Profile server 156 responds to requests by CPU 10 by providing profile information thereto. Profile server 156 attempts to gather information about users' likes and preferences, preferably by tracking websites visited by the user and what links they select or  
30 from existing profile data pertaining to the user found in user profile database 28. Profile server technologies are known. The data gathered by profile server 156 can be stored therein or can be transferred to user profile database 28.

Ad management server 158 preferably determines the actual advertisements which will be streamed to the corresponding PC 12 based on the user's profile and the marketing criteria stored in advertiser or marketing criteria database 24. For example, advertisement management server 158 can select advertisements based on a demographic keyword such as might be found in user profile database 28, track advertisement requests, quantities and frequencies of play, duration of the advertisements, play dates, day parts etc. In addition, ad management server 158 supports an association with a URL such as that used to support the fetch request with each advertisement. Ad management server 158 preferably includes the ability to generate reports such as reports by advertiser, agency or content stream.

Although certain types of advertisement management applications are known, it is preferred that ad management server 158 as implemented in the present invention be arranged to include functions which accept submissions via the Internet, allow on-line payment for advertisements and be integrated to provide ad management user system 160, ad stream server 142 and ad content database 26 functionality.

Advertising management user system 160 is a computing platform which includes an interface by which advertisements are loaded into the present invention. Ad management user system 160 allows an administrator to enter marketing criteria for a corresponding ad and includes executable programmatic code which encodes the advertisement as a data stream for storage on advertising content database 26 for subsequent delivery by advertising stream server 142. The interface provided to the administrator by ad management user system 160 is preferably a web browser interface. As noted above, the actual encoded advertisement is transmitted to, and stored on, advertisement content database 26, while the corresponding criteria are transmitted to, and stored on, advertiser marketing criteria database 24.

It is noted that the advertisement content is not limited to audio or audio/video content, and is not limited merely to a commercial message. The advertisement can include content in the form of uniform resource locators, executable programmatic code such as Java code and the like, which enables the user to communicate with the advertiser. Further, the advertisement can include supplementary content, such as a comedic message, to be played within an advertising break. The communication between the user and the advertiser can

effectuate a sale of the advertiser's goods or services and/or can contain data which identifies the user to the advertiser, but is not so limited.

Stream database 162 preferably includes a list of those content data streams available to a particular user. For example, stream database 162 can include a list of streams available to that particular user, perhaps based on geographic location, profile, point of user access etc. The stream list is preferably provided to web browser 164 in the form of hypertext mark-up language (HTML) page data for easy viewing and selection. For each stream, stream database 162 preferably stores the stream name, broadcast frequency of the stream, an identifying slogan, the URL of the stream, for example, the webcasting service URL address, the URL of the corresponding broadcast station website, the genre of the content provided by the station, the geographic location of the station, a contact name, a contact e-mail address and password, if appropriate, for the content provider's OIP server 146.

Further, although FIG. 4 shows separate web browser A 164, web browser B 166 and web browser C 154, these web browsers can be (a) separately executing instances of the web browser software; (b) different web browser applications; or (c) multiple windows executing under a single web browser application.

An example of a user's interaction with the system according to the aspect of the invention depicted in FIG. 4 is described with reference to FIG. 5.

Upon establishing contact with a website or other interface which provides a list of available streams from which the user can select, for example as retrieved and displayed by web browser A 164, the user selects a desired content stream in block 200. The selection is transmitted to CPU 10 and invokes media player A 150 and media player B 152 on PC 12, for example, via an ASX script file. Media player invocation is shown in block 202. This can also be done, as described above, via the response packet which activates the user's media player(s) and which provides uniform resource locators directing PC 12 to selected content and uniform resource locators directing users device to the system advertising subsystems at block 106.

Media player A 150 initiates a session with content server 140 which transmits the content stream, preferably as an ASF stream, including break marks to media player 150 as shown in block 204. Media player A 150 then plays the content stream as shown in block 206.

As previously discussed, the content stream includes "open event" messages, or the like, indicating that a break is upcoming and specifies the duration of the break. Media player A 150 detects the upcoming break in block 208 and notifies media player B 152 which requests an ASX file, or the like, from CPU 10 as shown in block 210. CPU 10 queries ad management server 158 for a list of targeted advertisements based on a matching of the user's profile with the advertisement criteria, creates the ASX file and sends it to media player B 152. Media player B 152 requests an advertisement indicated in the ASX file from advertisement stream server 142 (or the streaming can be automated via other servers such as ad management server 158). Media player B 152 preferably begins to buffer, but not play, the advertisement as shown in block 212.

Upon receipt of the event message in data stream 148 indicating the arrival of the break as shown in block 214, media player A 150 switches reproduction and playback to the user from data stream 148 to the advertisement data stream sent by advertisement stream server 142 as shown in block 216 or notifies media player B 152 to play and invokes the mute function of media player A 150 thereby suspending play. At some point during or after the advertisement is being played by media player B 152, the user may want to view a webpage for the product or service, etc., corresponding to the played advertisement. As shown by decision block 218, the user can make a fetch request which causes the requested page to be loaded by web browser C 154 as shown in block 220.

In the case where more than one advertisement will play, as determined by ad management server 158 based on the duration of the break, the process reverts to buffer advertisement block 212 as shown by decision block 222. In the case where no additional advertisement is to play, such as where the break is over and has been fully occupied by targeted advertisements, media player B 152 ceases to play back and media player A 150 again commences play back of content stream 148 as shown by block 206.

Although the period during which the advertising content is played is described above as being introduced by one or more messages such as an "open event" message, it is contemplated that the advertising period within the content stream can be detected in other ways, such as by detecting that the content stream includes an advertisement or detecting a silent period within the content stream. The duration of the advertisement or the silent period in the content stream can be determined and an advertisement(s) for the advertising data

stream selected based on the detected duration. The length can be detected, for example, by delaying the play back of content stream.

The process described by FIG. 5 continues until the user terminates the session by closing media player A 150 and/or media player B 152, losing connectivity with a server, etc.

Although the operation of this aspect of the invention as shown in FIG. 5 is described with reference to the specific servers presented in FIG. 4, it should be noted that the implementation of this aspect of the present invention is not so limited. It is contemplated that any server arrangement which can perform the steps identified in FIG. 5 can be used.

This aspect of the present invention advantageously allows the content server to be separated from the ad stream server by allowing the user's PC to switch between the requested content and the targeted advertisements. This arrangement advantageously allows streaming content to be provided from a near real-time server, including a content server which incorporates untargeted advertisements or a blank duration of time for the inclusion of an advertisement within its data stream. By detecting upcoming advertisement breaks in the content stream, the present invention provides substantial flexibility for how the targeted advertisements are presented to the user.

For example, an audio only content data stream offered by content server 140 can be augmented with a multimedia advertisement stream from advertisement stream server 142 and presented on PC 12 to the user and vice-versa. In addition, the advertisements can advantageously be arranged such that multiple, short, targeted advertisements can be presented to the user, along with supplemental content even where content stream 148 actually contains a smaller number of lengthy advertisements.

In addition, the present arrangement advantageously allows the user to visit a website while receiving the content/advertisement data streams. This allows a user to retrieve product and service information while their interest is still fresh. This arrangement can lead to a higher rate of impulse sales for the advertising vendor.

The above-described aspect of the present invention is described with respect to dual media players 150 and 152 executing on PC 12 in which media players 150 and 152 switch between a content stream and an advertising data stream based on the receipt of particular instructions embedded in the content stream. It is also contemplated that the present invention can be

implemented by executing a single instance of a media player 150 on PC 12 sequentially playing advertising data streams and content streams.

In the arrangement in which two instances of a media player are invoked on PC 12 such that one instance, media player A 150, plays the content stream and, interacting with executable programmatic code within web browser B 166 such as Java code, the second media player, media player B 152, begins queuing an advertisement data stream. As such, the executable programmatic code coordinates communication between the two media players. Upon receipt of an appropriate instruction, the first media player discontinues play of the content stream and the second media player begins playing the advertisement data stream. Upon completion of the advertisement break, the first media player continues content stream play.

In the alternative, the second media player can itself monitor the content stream and begin queuing and/or playing the advertisement stream upon receipt of the appropriate instructions(s) without the aid of web browser B 166. Upon completion of the advertisement break, the first media player continues playing the content stream. Of course, there is no limit to the quantity of media player instantiations which can be used, subject to the capability of PC 12 to accommodate those instantiations.

Although the present invention has been described in relation to particular embodiments thereof, many other variations and modifications and other uses will become apparent to those skilled in the art. It is preferred, therefore, that the present invention be limited not by the specific disclosure herein, but only by the appended claims.

**WHAT IS CLAIMED IS:**

1                   1.       A method of using a communication network to play streaming  
2 information to at least one user, the method comprising the steps of:  
3                   storing a user profile for each of the at least one users in a database;  
4                   receiving a request for a selected content data stream from the at least one  
5 user,  
6                   playing the selected content data stream on a device corresponding to the user;  
7                   identifying an advertising break within the selected content data stream;  
8                   retrieving at least one advertisement from an advertisement database in which  
9 each advertisement has at least one criterion associated therewith, the retrieved at least one  
10 advertisement being selected in accordance with a matching of the corresponding at least one  
11 user's profile criterion with the at least one advertisement criterion; and  
12                   playing the at least one retrieved advertisement on the device during the  
13 identified advertising break.

1                   2.       The method according to Claim 1, wherein a plurality of advertisements  
2 are identified and played in the case where the advertising break is longer in duration than a  
3 single advertisement.

1                   3.       The method according to Claim 2, wherein a combined duration of the  
2 plurality of played advertisements substantially matches the duration of the advertising break.

1                   4.       The method according to Claim 1, further including steps of:  
2                   transmitting, to the user device, a location at which additional advertising  
3 content may be found corresponding to the identified advertisement;  
4                   receiving a request from the user device to retrieve the additional advertising  
5 content corresponding to the identified advertisement address; and  
6                   presenting the additional advertising on the user device.

1                   5.       The method according to Claim 1, wherein the advertisement includes  
2 content which enables the user to communicate with the advertiser.



1                   6.     The method according to Claim 5, wherein the communication  
2     effectuates a sale.

1                   7.     The method according to Claim 5, wherein the communication includes  
2     identification data corresponding to the user.

1                   8.     The method according to Claim 1, wherein the step of playing the  
2     selected content data stream includes the steps of:  
3                   invoking a media player on the user device;  
4                   identifying the user device and a media player type; and  
5                   matching the user device identification and the media player type identification  
6     to determine a format for the retrieved advertisement.

1                   9.     The method according to Claim 1, further comprising the step of  
2     requesting an identification file, the identification file including a list of locations of the  
3     selected advertisements.

1                   10.    The method according to Claim 9, wherein the request is made when  
2     the user device receives a first event message indicating an upcoming advertisement break.

1                   11.    The method according to Claim 10, wherein the retrieving step  
2     includes:  
3                   requesting at least one advertisement from the list; and  
4                   buffering at least a portion of the at least one requested advertisement in the  
5     device while the selected content is playing.

1                   12.    The method according to Claim 11, wherein the step of playing the at  
2     least one retrieved advertisement includes the steps of:  
3                   receiving a second event message indicating the beginning of the advertisement  
4     break;

5 commencing play of the at least one buffered advertisement; and  
6 continuing play of the selected content stream when the at least one  
7 advertisement has been played.

1 13. The method according to Claim 1, further including the step of updating  
2 the user profile in accordance with characteristics of web sites visited by the corresponding  
3 user and in accordance with characteristics of the selected content stream.

1 14. The method according to Claim 1, wherein the selected content data  
2 stream and the at least one retrieved advertisement are played by a single media player.

1 15. A system which uses a communication network connected to at least  
2 one user device to play streaming information to at least one user of the at least one user  
3 device, the system comprising:

4 a first server connected to the communication network, the first server  
5 receiving a request from the user device to invoke a selected content stream;

6 a second server connected to the communication network, the second server  
7 providing the selected content to the user device; and

8 a third server connected to the communication network, the third server storing  
9 at least one advertisement and providing an advertisement stream to the at least one user  
10 device, the advertisement stream including at least one advertisement selected based upon a  
11 matching of at least one criterion corresponding to a profile of the user with at least one  
12 criterion corresponding to the stored advertisement, the advertising stream provided by the  
13 third server being played by the at least one user device during advertisement breaks in the  
14 selected content provided by the second server.

1 16. The system according to Claim 15, further comprising a fourth server  
2 connected to the communication network, the fourth server storing the at least one advertising  
3 criterion.

1 17. The system according to Claim 15, wherein a plurality of  
2 advertisements are identified in the case where the advertising break is longer in duration than

3 a single identified advertisement, the third server operating to provide a plurality of identified  
4 advertisements or other content approximately equal in duration to the advertising break.

1 18. The system according to Claim 15, wherein the first server operates to  
2 invoke at least one media player on the at least one user device.

1 19. The system according to Claim 15, wherein the second server operates  
2 to:  
3 receive a request for an identification file from the at least one user device;  
4 prepare the identification file in accordance with the received request, the  
5 identification file including a list of the at least one selected advertisement, the list being  
6 arranged such that a combined play back duration of the selected advertisements is  
7 approximately equal to a corresponding advertising break duration; and  
8 provide the identification file to the at least one user device.

1 20. The system according to Claim 19, wherein the list of selected  
2 advertisements include storage locations corresponding to the selected advertisements.

1 21. The system according to Claim 15, wherein the second server embeds a  
2 plurality of message types in the selected content stream.

1 22. The system according to Claim 21, wherein the message types include  
2 an indication of an upcoming break and an indication of the occurrence of a break.

1 23. The system according to Claim 15, wherein the third server is  
2 comprised of a scheduling system and a protocol encoder server.

1 24. The system according to Claim 15, further comprising a fifth server  
2 connected to the communication network, the fifth server capturing usage information  
3 corresponding to the at least one user, the usage information including content sought by the  
4 at least one user and content previously selected by the at least one user, the usage  
5 information being included as part of the profile corresponding to the at least one user.

1                   25.     The system according to Claim 16, further comprising an advertising  
2 user system connected to the communication network, the advertising user system operating  
3 to:

4                   receive an advertisement and the corresponding at least one criterion;  
5                   transmit the advertisement and the corresponding at least one criterion to the  
6 third server.

1                   26.     The system according to Claim 25, wherein the advertising user system  
2 converts the advertisement into a format which can be interpreted and at least one of  
3 displayed and heard on the at least one user device.

1                   27.     A system which uses a communication network connected to at least  
2 one user device to play streaming information to at least one user of the at least one user  
3 device, the system comprising:

4                   at least one server connected to the communication network, the at least one  
5 server executing functions which are distributed among the at least one server, the functions  
6 including:

7                   receiving a request from the user device to invoke a selected content  
8 stream;

9                   providing the selected content to the user device;

10                  storing at least one advertisement and providing an advertisement  
11 stream to the at least one user device, the advertisement stream including at least one  
12 advertisement selected based upon a matching of at least one criterion in a profile  
13 corresponding to the user with at least one criterion corresponding to the stored  
14 advertisement; and

15                  the advertisement stream being played by the at least one user device during  
16 advertisement breaks in the selected content stream.

1                   28.     The system according to Claim 27, wherein the at least one server  
2 further executes a function which invokes at least one media player on the at least one user  
3 terminal.

1           29.    The system according to Claim 28, wherein the at least one server  
2 executes functions further including:  
3           receiving a request for an identification file from the at least one user device;  
4           preparing the identification file in accordance with the received request, the  
5 identification file including a list of the at least one selected advertisement, the list being  
6 arranged such that a combined play back duration of the selected advertisements is  
7 approximately equal to a corresponding advertising break duration; and  
8           providing the identification file to the at least one user device.

1           30.    The system according to Claim 29, wherein the list of selected  
2 advertisements includes storage locations corresponding to the selected advertisements.

1           31.    The system according to Claim 27, wherein the at least one server  
2 further executes a function which embeds a plurality of message types in the selected content  
3 stream.

1           32.    The system according to Claim 31, wherein the message types include  
2 an indication of an upcoming break, the duration of the break and an indication of the  
3 occurrence of a break.

1           33.    The system according to Claim 28, wherein the at least one server  
2 further executes a function which captures usage information corresponding to the at least one  
3 user, the usage information including content requested by the at least one user and content  
4 streams previously selected by the at least one user, the usage information being included as  
5 part of the profile corresponding to the at least one user.

1           34.    The system according to Claim 33, wherein the at least one server  
2 executes functions further including:  
3           receiving an advertisement and the corresponding criteria;  
4           converting the advertisement into a streaming format;  
5           storing the advertisement; and

6 storing the corresponding criteria in a database.

1 35. A method of using a communication network to play streaming content  
2 to at least one user, the method comprising the steps of:

3 storing a user profile for each of the at least one users in a database;

4 receiving a request for a selected content stream from the at least one user, the  
5 content stream including a message indicating an upcoming advertisement break and a  
6 message indicating the advertisement break has occurred;

7 playing the selected content stream on a device corresponding to the at least  
8 one user;

9 identifying the upcoming advertising break message in the selected content data  
10 stream;

11 buffering at least a part of at least one advertisement from an advertisement  
12 database in which each advertisement has at least one criterion associated therewith, the  
13 retrieved at least one advertisement being selected in accordance with a matching of the  
14 corresponding at least one user's profile criterion with the at least one advertisement criterion;

15 identifying the message indicating the beginning of the advertisement break;  
16 and

17 playing the at least one buffered advertisement on the device during the  
18 identified advertising break.

1 36. A device connected to a communication network for playing streaming  
2 information to at least one user, the device comprising:

3 at least one media player, the at least one media player:

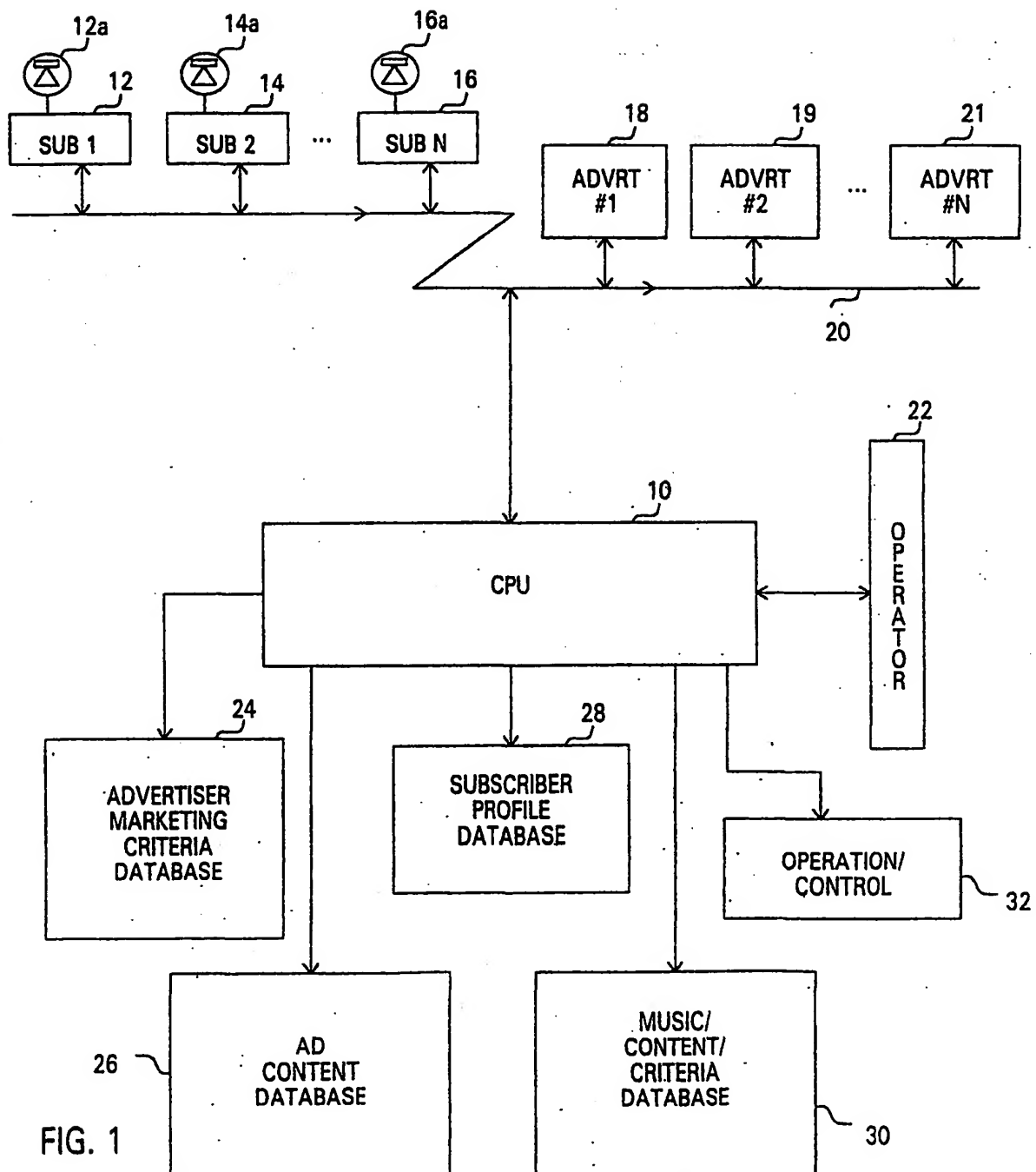
4 playing a content stream selected by the at least one user, the content  
5 stream including an advertising period; and

6 playing an advertising data stream to the user, the advertising data  
7 stream being separate from the content stream and being played to the user during the  
8 advertising period in the content stream.

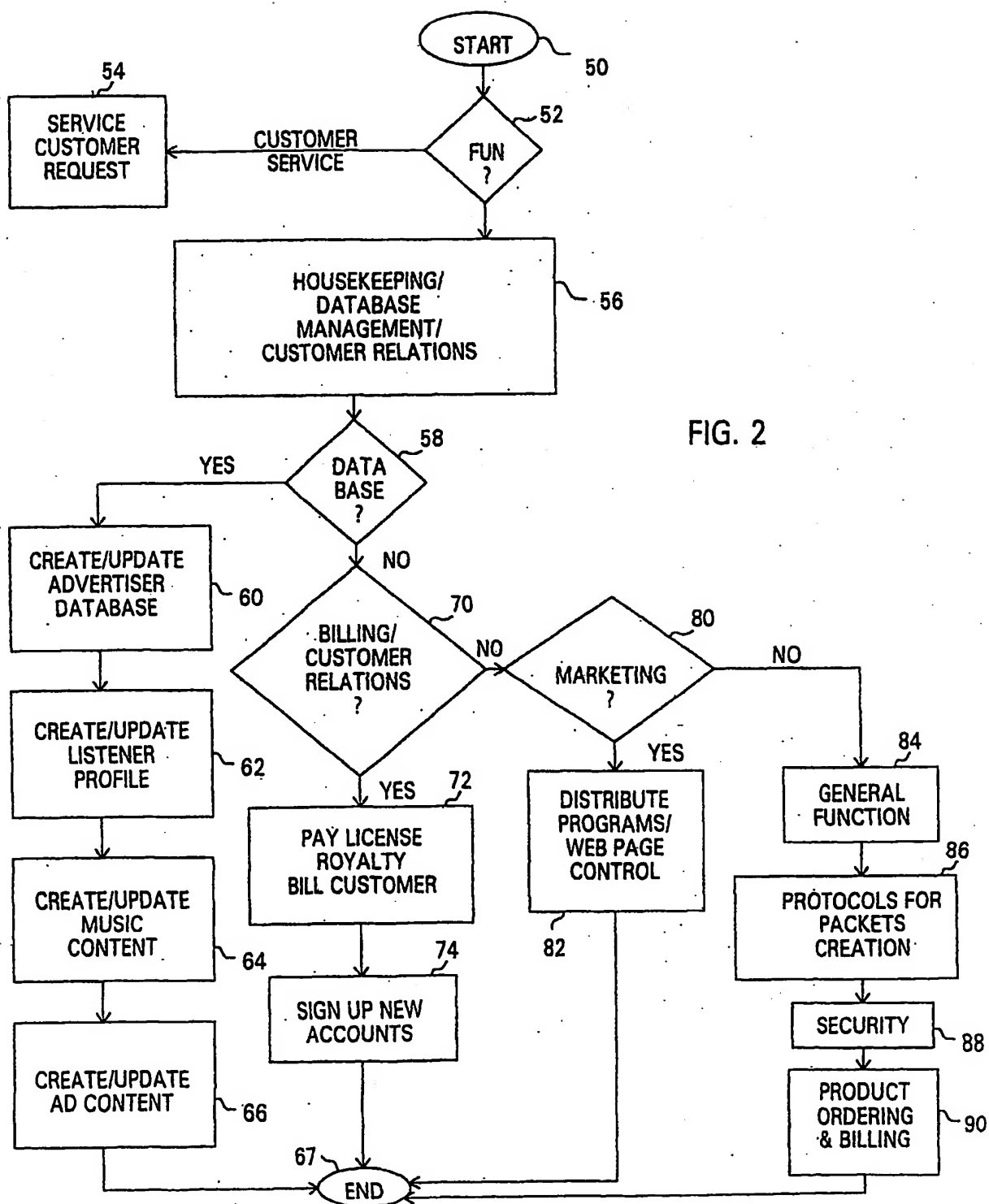
1                   37.     The device according to Claim 35, wherein the advertising period is  
2     established by a message included within the content stream.

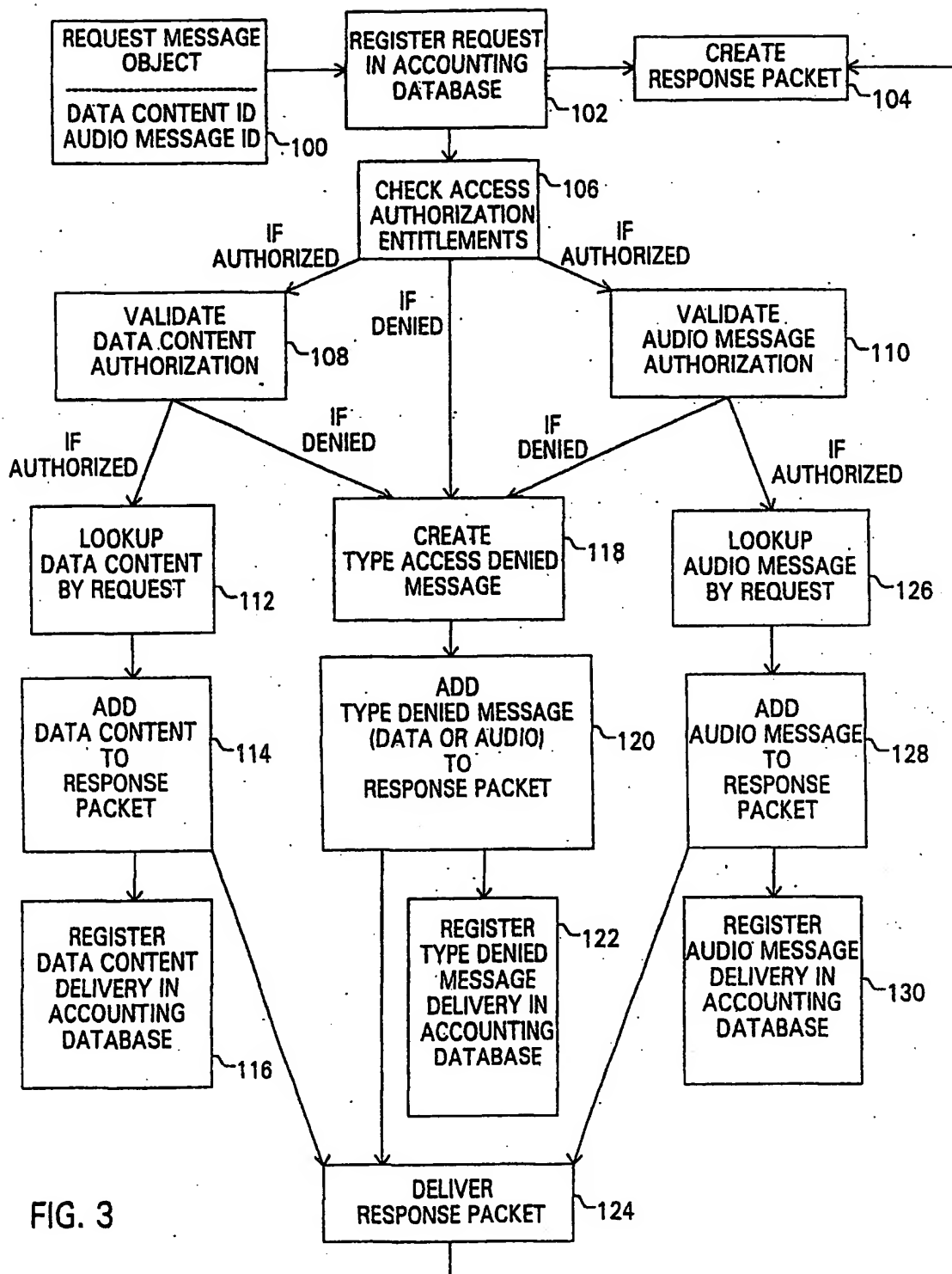
1                   38.     The device according to Claim 35, wherein the advertising data stream  
2     includes supplementary content.

1                   39.     The device according to Claim 35, wherein the advertising data stream  
2     is comprised of advertising data having at least one corresponding advertising criterion,  
3     wherein the at least one user has at least one corresponding user criterion, and wherein the  
4     advertising data is selected based on a matching between the at least one user criterion and the  
5     at least one advertising criterion.









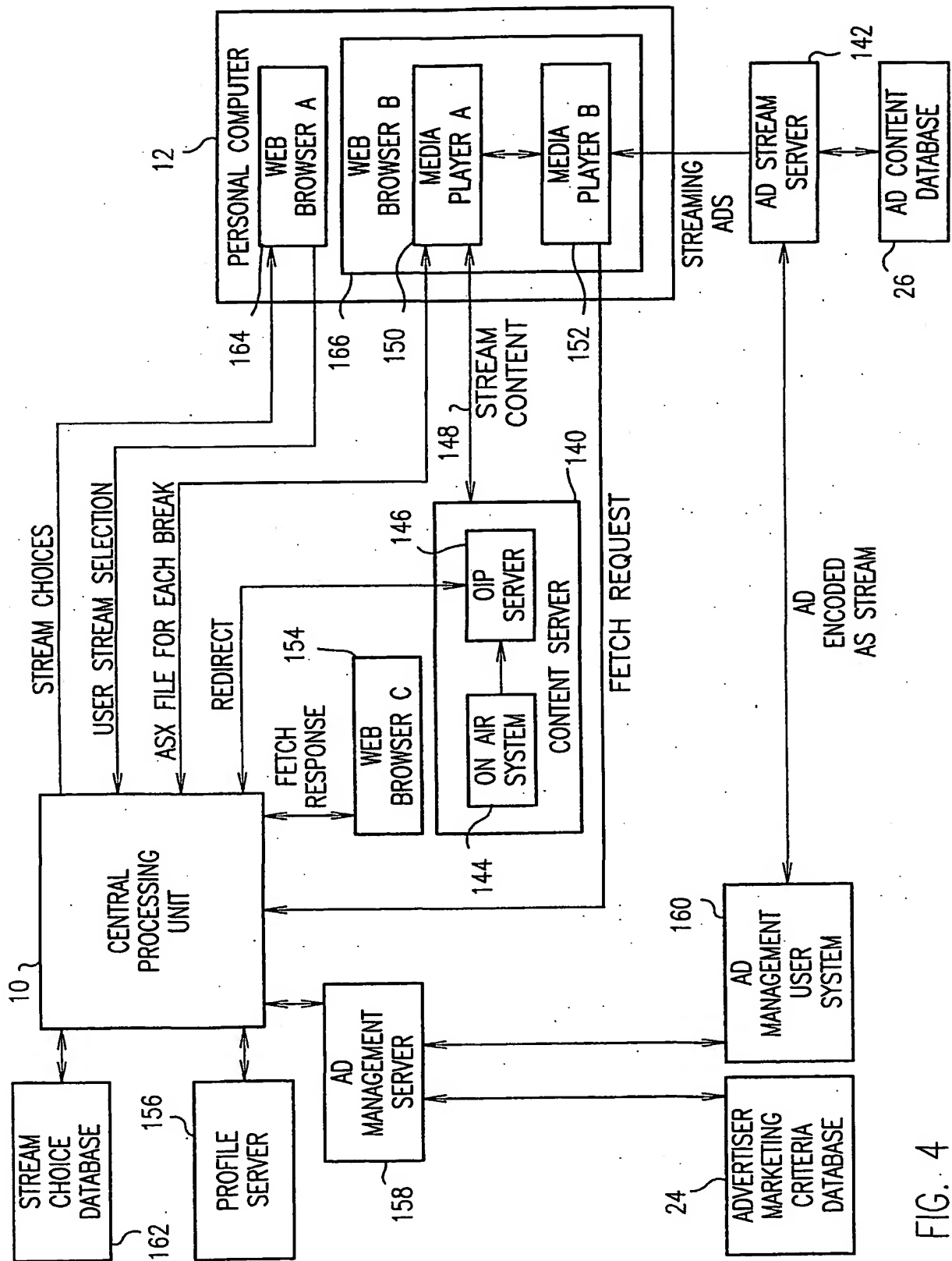


FIG. 4

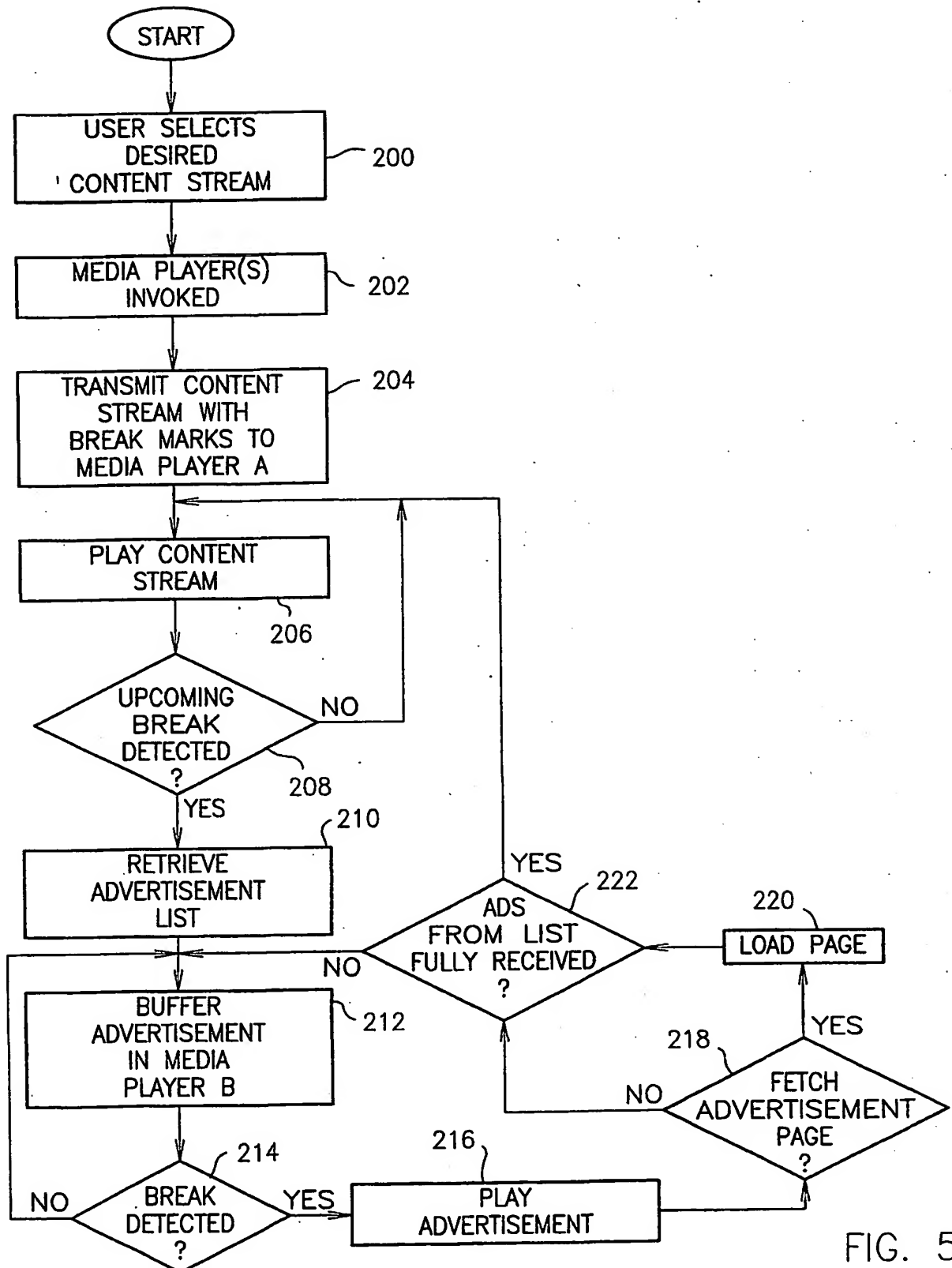


FIG. 5